Source Water Assessment Program (SWAP) Report For Berlin Retirement Home, Inc.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Prepared: November 13, 2000

Table 1: Public Water System (PWS) Information

PWS NAME	Berlin Retirement Home, Inc.
PWS Address	135 Pleasant Street
City/Town	Berlin, Massachusetts
PWS ID Number	2028007
Local Contact	Debora Cosenza
Phone Number	(978) 838-2089

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	2028007	333	1200	High
Well #2	2028007	259	656	High
Well #3	2028007	267	688	High
Well #4	2028007	259	656	High

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? inventory land uses within the recharge areas of all public water supply sources;
? assess the susceptibility of drinking water sources to contamination from these land uses; and
? publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Wells
The system supplies water to thirteen buildings. There are four rock wells, each well consisting of a six 6 inch diameter well. The wells are named well #1, #2, #3 and #4.
The Zone Is and Interim Wellhead Protection Areas (IWPA) are 333 feet and 1,200 feet for well #1, 259 feet and 656 feet for well #2 & #4, and 267 feet and 688 feet for well #3. Please refer to the attached map of the Zone I and IWPA. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration.

The well serving the facility has no treatment at this time. For current information on

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

onmonitoring results, treatment and a copy of the most recent annual Consumer Confidence Report, please contact the Public Water System contact person listed above in Table 1.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.
Key issues include:

1. **Inappropriate activities in Zone Is;**
2. **An underground storage tank (UST) with heating oil;**
3. **Landscaping and lawncare;**
4. **Septic system;**
5. **Stormdrains;**
6. **Junk yard;**
7. **Railroad tracks; and**
8. **Aquatic wildlife.**

The overall ranking of susceptibility to contamination for each well is high, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone I –** Currently, the wells do not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The Zone Is contains buildings, a road, a lawn on which fertilizer is applied, and parking areas. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.
   Recommendation:
   ✓ Do not use fertilizers or road salt within the Zone I.

2. **Underground Storage Tanks –** USTs with heating oil are within the Zone Is and IWPAs of all the wells. Another UST with gasoline is located within the IWPAs. Reports on file indicate that all the tanks are double walled with leak detectors. If managed improperly, USTs can be a potential contaminant source due to leaks or spills of the chemicals they store.
   Recommendations:

Table 2: Table of Activities within the Water Supply Protection Areas

Facility Type	Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Residential	Fuel Storage Below Ground	All	All	High	Double walled with leak detection
	Junk yard	No	All	High	Solid waste disposal
	Railroad tracks	No	All	High	Spills or leaks of transported materials
	Parking areas, driveways & road	All	All	Moderate	Limit road salt usage and provide drainage away from wells
	Landscaping and lawncare	All	All	Moderate	Fertilizer use
	Septic System	All	All	Moderate	See septic systems brochure in the appendix
	Storm drain	No	#2 & #4	Low	From residential and parking areas
	Aquatic wildlife	No	All	Low	On-site pond and stream

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

- ✓ Comply with all provisions of the regulations regarding USTs. Consult with the local fire department for any additional local code requirements regarding USTs.
- ✓ Any modifications to the USTs must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements.

3. **Landscaping and lawncare** - Fertilizer is applied to the lawn that is located within the Zone 1 and IWPA. Fertilizers and pesticides, if improperly applied or stored, can be potential sources of contamination to the water supply.
   Recommendations:
   - ✓ Do not use fertilizers or pesticides in the Zone I.
   - ✓ Use best management practices when applying fertilizer in the IWPA.

4. **Septic systems** - The septic systems are located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.
   Recommendations:
   - ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.
   - ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

5. **Stormwater drains –**The stormwater drains are located within the IWPA. As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.
   Recommendations:
   - ✓ Have the catch basins inspected, maintained, and cleaned on a regular schedule.
   - ✓ The Department recommends the public water supplier consider nonstructural techniques such as parking lot sweeping to reduce the amount of potential contaminants in storm water runoff. Additionally, the public water supplier may want to consider structural BMPs (e.g. stormwater swale, detention basin, etc.) as part of comprehensive storm water management plan for the site (refer to Storm Water Management Handbook, Volume 1 and 2 for information on BMPs).

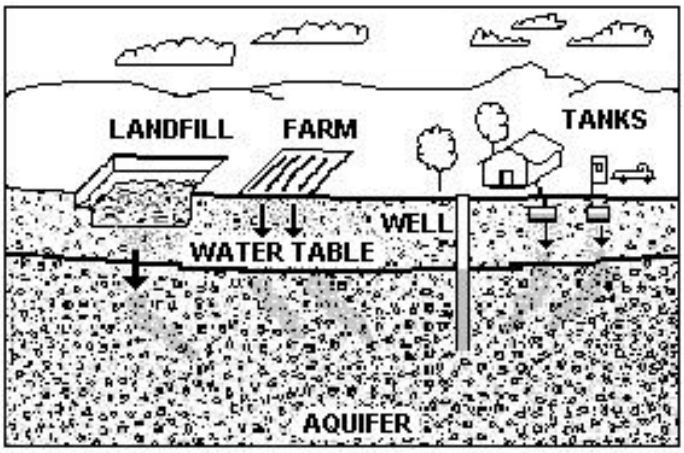

Figure 1: Example of how a well could become contaminated by different land uses and activities.

6. **Junkyard** – Old cars are disposed of in an area west of the on-site buildings that falls within the IWPA. Spills, leaks, or improper handling of automotive chemicals, wastes, and batteries can potentially contaminate the water supply.
   Recommendations
   - ✓ Notify the junkyard that part of the facility is located in a public water supply protection area.
   - ✓ Work with junkyard owner to be sure that best management practices are used for proper handling of materials and in containing spills and leaks.

7. **Railroad tracks –** A right-of-way and tracks cross the IWPA. Over-application or improper handling of herbicides on railroad right-of-way is a potential source of contamination. Leaks or spills of transported chemicals or train maintenance chemicals are also potential sources of contamination to the water supply.
   Recommendations:

For More Information:

Contact Josephine Yemoh-Ndi in DEP's Worcester Office at (508) 792-7650 x 5030 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at: www.state.ma.us/dep/brp/dws.

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the water department, town boards, the town library and the local media.

- ✓ Work with local officials during their review of the railroad right-of-way Yearly Operating Plans to ensure that the portion of right-of-way within the facility IWPA is not sprayed with herbicides.
- ✓ Work with your local fire department to ensure that the IWPA is included in Emergency Response Planning.

8. **Aquatic wildlife** - A pond is located within the IWPA. Duck and other wildlife waste in and around the pond is a potential source of contamination to the water supply.

   Recommendation:

   - ✓ Discourage wildlife by prohibiting the feeding of ducks and wildlife.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. Berlin Retirement Home, Inc. should review and adopt the following recommendations at the facility:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements. Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying their system.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Redirect road and parking lot drainage in the Zone I away from well.

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices.
- ✓ Post drinking water protection area signs at key visibility locations.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials.
- ✓ Concrete pads should slope away from well and well casing should extend above ground.

Planning:

- ✓ Work with local officials in Berlin to include the Berlin Retirement Home IWPAs in Aquifer Protection District Bylaws and to assist you in improving protection.

- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet from last year (Please note: each program year the Department posts a new Request for Response for the Grant program

(RFR)).

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure
- Wellhead Protection Grant Program Fact Sheet